

Appl. No. 10/620,483
Amdt. dated: November 30, 2004
Reply to Office Action dated October 5, 2004

Remarks/Arguments

These remarks are in response to the Office Action dated October 5, 2004. This reply is timely filed. At the time of the Office Action, claims 1-24 were pending in the application. Claims 3-8, and 14-19 were objected to as being dependent upon a rejected base claim, but were indicated as allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 1-2, 10-13 and 20-24 were rejected under 35 U.S.C. 102(e) as being unpatentable over U.S. Patent Publication No. 2003/0112186 to Sanchez et al. ("Sanchez"). Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Sanchez.

The rejections are set out in more detail below.

I. Brief Review of Applicants' Invention

Prior to addressing the Examiner's rejections on the art, a brief review of applicant's invention is appropriate. The present invention relates to a dynamically variable frequency selective surface and method for controlling same. Independent claim 1 recites a method by which a frequency response of a frequency selective surface is dynamically modified by selectively varying a position and/or a volume of a conductive fluid forming at least a portion of the frequency selective surface. Independent claims 13 and 20 recite a frequency selective surface that includes a periodic resonance structure that is comprised of a plurality of elements spaced over a surface. The frequency selective surface also includes a conductive fluid and a fluid control system for dynamically varying a position or volume of the conductive fluid in the periodic resonance structure. Claim 13 recites that changing the position or volume of the conductive fluid allows the system to dynamically vary at least one dimension of the elements defining the periodic resonance structure. Claim 24 recites that dynamically changing a position and/or volume of the conductive fluid changes a shape of the elements.

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II. Claim Rejections on Art

Claims 1-2, 10-13 and 20-24 were rejected under 35 U.S.C. 102(e) as being unpatentable over U.S. Patent Publication No. 2003/0112186 to Sanchez et al. ("Sanchez et al."). However, Sanchez et al. does not teach that a frequency selective surface can be controlled using a conductive fluid. In fact, Sanchez et al. does not mention the use of conductive fluids or liquids at all.

Sanchez et al. uses a reconfigurable artificial magnetic conductor (RAMC). See ¶ [0054] of Sanchez et al. The RAMC in Sanchez et al. has a frequency selective surface, but it does not utilize a conductive fluid as recited in Applicants' claims. Instead, the RAMC is fabricated using conventional means. For example, Sanchez et al. suggests that the RAMC can be formed by sandwiching a 250 mil thick foam core between two printed circuit boards. See ¶ [0065] of Sanchez et al. For example, Sanchez et al. proposes conventional single sided 60 mil Rogers R04004 board.

Further, Sanchez et al. does not control the frequency selective surface disclosed therein by dynamically varying a position or volume of the conductive fluid. Instead Sanchez et al. controls the RAMC using vias to selectively excite patches of the frequency selective surface with a bias voltage applied through the RF backplane. See ¶ [0058] – [0060], Sanchez et al. Sanchez also uses conventional control circuitry including variable capacitive elements, ballast resistors and bypass capacitors. ¶ [0058]. Notably absent from the disclosure of Sanchez et al. is any reference to the use of a conductive fluid in this regard. For all of the foregoing reasons, Applicants respectfully believe that claims 1-2, 10-13 and 20-24 are allowable in their current form.

Claim 9 was rejected under 35 U.S.C. 103(a) as being unpatentable over Sanchez. As noted above, however, Sanchez et al. does not disclose a frequency selective surface in which a position or a volume of conductive fluid is used to dynamically control the operation of the device. Accordingly, claim 9 is believed to be allowable at least by virtue of its dependence upon an allowable base claim.

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III. Allowable Subject Matter


Applicant notes with appreciation that the Examiner has indicated claims 3-8 and 14-19 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. As noted above, however, Applicants believe that these dependent claims are allowable over the prior art of record in their present form. Accordingly, Applicants decline to amend these claims at this time.

IV. Conclusion

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. Nevertheless, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the prosecution of the application to an allowance. In view of the foregoing remarks, Applicants respectfully requests reconsideration and prompt allowance of the pending claims.

Respectfully submitted,

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Date


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